AMATEUR SATELLITE REPORT

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AMSAT's Newsletter for the Amateur Space Program.

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W5LFL Launches First Ham-In-Space Operation

After more than a decade in planning the first amateur radio station to be operated from a space-borne platform is a reality. NASA Mission Specialist Dr. Owen K. Garriott, W5LFL, thus becomes the first active ham-in-space.

The first confirmed contacts between W5LFL and hams on terra firma probably occurred on orbit #40 Wednesday evening, 01 Dec. 83. The orbit passing from northwest to southeast off the U.S. west coast was widely monitored. First reports to *ASR* of confirmed contacts came from Washington Area Coordinator Jim Smith, KA7APJ, of Seattle. He played recordings over the telephone which documented W5LFL's contacts with several stations in the seventh call district. The signal heard by Smith was strong and steady.

Earlier reports of contacts made on orbit #35 remain unconfirmed although widely reported by usually reliable west coast sources.

By the time orbit #96 zipped up the east coast on Sunday morning at 8:30 AM EST, thousands had managed to snatch a fleeting second or more of W5LFL's voice from the Space Shuttle Columbia. Apparently far fewer than anticipated have heard their calls acknowledged. Dr. Garriott has explained on the air several times that he is hampered by the background noise in the shuttle and by having but a single earphone which leaves the other ear uncovered. Nevertheless, dozens of contacts have been confirmed. AMSAT regular K4GFG of Florida was one whose call was read by W5LFL and recorded at WA2LQQ.

Meanwhile Associated Press accounts report that King Hussein of Jordan, also known as JY1, engaged W5LFL in a 4 minute QSO early on Sunday 4 Dec. Sources indicate it probably was orbit #91 which passed over Jordan at 0607 UTC on Sunday. His Majesty and Dr. Garriott were said to have exchanged pleasantries and shared in the pride of bringing the hobby of ham radio into space with W5LFL. King Hussein has been an ardent supporter of the amateur space program. In 1981 he donated $10,000 to AMSAT during a trip to the U.S. that included a telephone call to AMSAT President W3IWI. (*ASR* #20, 16 Nov. 81.)

Signals received from Dr. Garriott's HT were excellent copy on the ground as most reported full quieting signals whenever W5LFL was heard. Confusion was evident on the ground, however, as ill-informed ultra-lids repeatedly called on the downlink frequency, 145.55. The lids and n'er-do-wells were immediately pounced upon by a score of would-be spectral policemen each of whom, in turn, was accosted by a covey of airborne philosophers discounting the value of berating or disciplining the original intruder. By our reckoning, the leverage exerted by a single lid had never been higher. A single syllable uttered out of turn on 145.55 catalyzed a torrent of discipline and philosophy which grew exponentially. Only minutes later would tranquility be restored. Then, it would seem, someone would sigh a sigh of relief into a hair-trigger VOX...and inadvertantly launch another amateur radio chain reaction detonation. Ah, the sociologists!

More troubling, it seems, than the ultra-lids, were the super-hogs and nihilists, mostly in California, who largely succeeded in converting the tremendous leverage afforded them into total mahem. Here one found the perfect amateur radio soup. Take 50,000 radios. Spread them among 40,000 competent operators, 8,000 beginners, 150 incompetents, 300 Neanderthals and 200 anarchist/nihilist types. Mix slowly for several days under a strong on-shore breeze and what've you got? Los Angeles, naturlick!

East Coast Garriott-watchers did not go unscathed or unabused. New York probably makes up for the number of free spirits found in the L.A. environs with a higher per capita lid rate than most places. Chaos was the rule in N.Y. as well with threats, counter-threats and visions of black-hatted hoodlums taking to the highways to mete out some vengeance contracted for by Cosa Nostra types.

The sometimes circus atmosphere carried over, for better or worse, into the general media. Press and broadcast media seem taken up in this extravaganza and few if any of the normal precautions seem to have been observed as a notably high ratio of aired and printed stories contained serious flaws. Some were laughable and even forgiveable. Others were serious enough to

cause serious disconcert in the informed reader. One Associated Press story quoted by Phil Karn, KA9Q, had the frequencies wrong, the operating procedure (odd/even minutes) reversed and other non-trivial faults. Phil did manage to straighten the author out on the offending points.

TV crews were out with a vengeance as well, WØPN, KA7APJ and KW2U, among others, were all the focus of TV interviews and reports. All are AMSAT "experts" and thus are sought out by the media for these types of reports. Other hams around the nation were also much sought after and it seems fair to say that the press coverage given amateur radio in the past week has been unprecedented in any circumstances. Coming as it does on the heels of the Granada reports in which ham radio for days captured the headlines as the major conduit of world headline news, the W5LFL coverage seems certain to cap what has got to be the best year ever for amateur radio media coverage. Many wonder if this interest by the media will soon be reflected in the populace with a rise in new license applications. Amateur radio growth has slumped after the collapse of the CB boom. ARRL membership similarly has flattened out. Newington stands to reignite the growth patterns of a decade ago if it correctly proceeds to corral the interest stirred by W5LFL and the media coverage. AMSAT similarly is positioning itself to capture the wave of new enthusiasm many see in the offing.

Amateur radio coverage of the event has been excellent with professional-quality, on-the-air services rendered by WA3NAN, W5RRR and W6VIO. The station at W1AW has carried a full basket of W5LFL bulletins as well. WA3NAN at the Goddard Space Flight Center in Greenbelt, Maryland has been on the air on hf and vhf with NASA-sourced Shuttle audio feeds. These apparently have had a huge following. The 500 watt vhf fm signal on 147.45 MHz was audible well up and down the east coast. Likewise the club stations at W5RRR (Houston, Johnson Space Center) and W6VIO (Pasadena, Jet Propulsion Laboratory) served large listener communities for nearly the entire mission. The effort was most impressive and probably marks the high point in coverage of these types of missions.

QSO and SWL reports should be sent to ARRL, 225 Main Street, Newington, CT 06111. You must include a business size SASE. Please mark the outer envelope: "STS-9" and indicate either "QSO Report" or "SWL Report".

With the ham-in-space mission of Owen K. Garriott, W5LFL now complete one is tempted to offer assessments as to the merits of it all. Recognizing that history requires the added perspective of time to obtain clear focus, it seems W5LFL will have succeeded in his most fundamental endeavor. He will in the end have reached millions of otherwise ambivalent youngsters with the notion that amateur radio is not necesarily an end unto itself. Seen in the correct perspective it can become a mode for channeling creative, youthful energies into productive technical careers. This was Garriott's message. We perceive that much of the substance will have gotten through...albeit by a circuitous and often tortuous route. And so the years of planning by W3XO, W5AVI, K6DUE, W4KFC and scores of others appears, at this juncture, to have succeeded.

Teleconference Radio Net Airs To Nationwide Audience

The most recent airing of the now-famous Honeywell North American Teleconference Radio Net (TRN) was on Thursday evening, 1 Dec. 83. The topic was the Amateur Space Program and the speakers were AMSAT officials. The program reached a radio audience exceeding 30,000 by some estimates. Other estimates put the listening audience in Canada and the U.S. as high as 75,000.

The network involved over a hundred repeaters linked by a dial-up telephone bridge arrangement operated ad hoc by the Honeywell Amateur Radio Club. Rick Whiting, WØTN, is the prime-mover at Honeywell, Minneapolis.

AMSAT speakers included Rich Zwirko, K1HTV, retiring Vice President for Operations; Jan King, W3GEY, Vice President for Engineering; Bill Lazzaro, N2CF, General Manager and Tom Clark, W3IWI, President. Vern "Rip" Riportella, WA2LQQ, Executive Vice President, moderated the "panel of experts" for the event. The presenters and a local Honeywell coordinator, Jeff Brennan, WB4WLW, were all situated at the AMSAT Headquarters office in Silver Spring, Maryland just outside of Washington, D.C.

The program began at 8:15 PM EST with a previously taped interview with WA2LQQ filling the airtime as various staions around the nation integrated with the network. At 8:30 the first part of the net began with opening remarks by WØTN and WB4WLW. Then WA2LQQ led off with remarks which set the tone and objectives for the evening. Rip touched on the challenge and fascination in dealing with Amateur Space topics. In noting the untimely passing of ARRL President Vic Clark, W4KFC, the previous Friday, Rip noted that it was W4KFC who had worked hard for the then-in-progress flight of Owen Garriott, W5LFL, the first ham-in-space operation. Rip noted the irony in his passing on the eve of one of Amateur Radio's major achievements and dedicated the evening's net to Vic's memory on behalf of AMSAT.

Next up was K1HTV. Rich covered operational aspects of the present satellites including the operational Mode A birds (RSs) and AO-10. He stressed the entry level equipment required to operate and described some of the DX possibilities that could be enjoyed immediately on the present satellites.

Following Rich, W3GEY developed a theme of encouraging more direct participation in technical projects by individuals and groups around the world. He spoke of the possibility of a dual tier approach to projects wherein a strictly domestic satellite project might be under way concurrently with more ambitious projects requiring the full, international cooperation and the fullest support possible of all the major AMSAT affiliated organizations. Next Jan addressed future projects and where they are going. He mentioned that UoSAT B was racing towards a launch date of March, 1984; that Phase IIIC launch possibilities were being raised and that the

JAS-1 and Arsenne projects of Japan and France, respectively, were on their way as well.

Bill, N2CF, spoke about AMSAT, the organization. He explained what it is, what it does and where it derives its resources. Bill detailed the benefits of membership including discounts at ham radio stores, discounts on AMSAT Software Exchange products and a host of services provided by AMSAT. Bill strongly suggested AMSAT membership as THE best way to keep the primary objective in tact: the provision of amateur radio satellites.

Then W3IWI picked up the topic that was foremost in many minds: W5LFL. Tom led the listeners through an explanation of the mission of Owen Garriott and what the fundamental motivations of W5LFL were as perceived by AMSAT. (To encourage technical careers among youth.) He then listed many of the orbits that W5LFL would be working throughout his mission in space and explained the procedures.

About halfway through Tom's presentation, Rip announced that W5LFL was in view of California on a south bound track. Coincidentally, *ASR* has learned that the JPL operation at W6VIO had been playing the TRN audio on its normal Shuttle Audio frequencies. Someone had apparently picked up the TRN and to everyone's chagrin, retransmitted it right smack on 145.55! Right on top of Dr. Garriott's downlink! To make matters even more bizarre, here was W3IWI beseeching everyone to avoid transmitting on the Shuttle downlink of 145.55....and what should be heard by all of Los Angeles on 145.55? W3IWI's melodious voice saying please avoid 145.55! Ouch! Zounds! Only in L.A.!

Not that that was the only amusing event of the evening. Known only to the huddled 6 at the microphones at Silver Spring, Dick Daniels, W4PUJ, was present as backup for the speakers. Dick had gotten relatively comfortable on the carpeted floor and by the time Jan's talk was in progress there was heard a series of pronounced snores. Daniels was quite oblivious to the racket his snoring developed, of course. But the assembled speakers had a supreme challenge to avoid being convulsed with laughter at the predicament Jan was in. Jan was obviously amused but intent on maintaining an unperturbed demeanor. The rest were just as intent on venting their amusement at both Dick and Jan. In the end, however, after several ill-muffled gufaws, the "show" went on with the rhythmic W4PUJ "sawmill" hopefully a decibel or two below audibility to the thousands listening!

After Tom's presentation the TRN swung into part 2 with questions coming from all around the U.S. and Ontario too. The questons were generally excellent and came from obviously well-informed individuals sincerely interested in AMSAT and Hams-in-Space. One pleasant surprise came when Dick Cotten, W8DX, who was mentioned by WA2LQQ in the first 15 minute, pre-net warm-up, showed up as one of the early questioners. Dick wanted to know when the AO-10 telemetry would be corrected and updated. Many folks were interested in that theme, he said.

After nearly an hour of questions and answers the TRN ran out of time. It was 10:30 PM EST. All of HQ thought it had gone very well. By the next day the first critiques to come in concurred. It HAD gone very well indeed. The concurrent flight of W5LFL, far from detracting from the evening's program, likely further heightened interest.

Numerous stations recorded the program on audio cassette tape. Dr. Norm Chalfin, K6PGX, is offering good quality copies of the tape for a $5 donation. Write to K6PGX at P.O. Box 463, Pasadena, CA 91102.

AMSAT's new Vice President for Operations, Doug Loughmiller, KO5I, announced on 6 Dec. 83 that the entire TRN will be transmitted twice on AO-10. The first occasion will be when the satellite is positioned over the Pacific for service to VK, ZL and Oceania. The first transmission will be on Sunday, 11 Dec. 83 at 2100 UTC. The frequency will be 145.957, the ACNF. Then, for service into Europe, the TRN will again be transmitted on AO-10 on Friday, 23 Dec. 83 at 1300 UTC. Again the frequency will be 145.957 MHz.

Software Booklet by N5AHD Is Offered

AMSAT Headquarters announces the availablility of a booklet by Bob Diersing, N5AHD, of the AMSAT Software Exchange. Entitled "Using Microcomputer Programs for Radio Amateur Satellite Orbital Prediction", the approximately 40-page booklet is designed "primarily for Radio Shack, IBM PC and CP/M-Based S-100 Bus Microcomputers." It contains chapters on Keplerian elements, AO-10 orbit loading, updating and running your programs. It also contains complete program listings for many of the popular micros.

The booklet is available from AMSAT Software Exchange through AMSAT Headquarters, P.O. Box 27, Washington, DC 20044. The price is $8.50 for AMSAT members or $5.00 when purchasing software. For nonmembers the price is $10 alone or $5.00 when purchasing software.

From KA9Q

Satellite:	OSCAR 10
Catalog number:	14129
Epoch time:	83339.50000000
Mon. Dec. 5	12:00:00.000 1983 UTC
Element set:	MH 12-5-83
Inclination:	25.8760 deg
RA of node:	227.6170 deg
Eccentricity:	0.6080052
Arg. or perigee:	225.4620 deg
Mean anomaly:	74.7610 deg
Mean motion:	2.05847690 rev/day
Decay rate:	0 rev/day 2
Epoch rev:	360
Semi major axis:	26106.271 km
Anom. period:	699.546349 min
Apogee:	35602.944 km
Perigee:	3857.447 km
Translate freq:	581.0047 MHz
Invert:	1
Beacon:	145.8100 MHz

Davidoff Book Readied For January Delivery

ARRL is planning to begin shipping its newest major publication, "Satellite Experimenter's Handbook" by Martin Davidoff, K2UBC, in mid-January *ASR* has learned. The long-awaited work represents several years of effort by K2UBC, a long-time AMSAT supporter and former Director of AMSAT. Marty teaches mathematics at Catonsville College near Baltimore, Maryland.

The book is designed to teach an intelligent beginner a great deal about orbits, satellites and the like. It is partially based on Dr. Davidoff's prior work in the area, "Using Satelites in the Classroom." This work was privately printed in limited editions but was well-received by science educators interested in bringing space-age science to the high school and undergraduate college curriculum.

The format of the new book is similar to the ARRL Radio Amateur Handbook. Besides Amateur Radio satellites, the book also addresses weather and TV broadcast satellites.

AMSAT will be a primary distributor for this new book and will realize a handsome commission on each volume sold. Naturally all AMSAT members are strongly encouraged to obtain their copy from AMSAT. The price is $10 U.S., $11 Canada and elsewhere. See also the ad in *Orbit* #15, pages 34 and 35.

Project OSCAR Calendar Announced

Project OSCAR President W6XN announces that the new Project OSCAR orbital prediction calendar will soon be ready. The 1984 version will feature accurate predictions for the time and longitude of equatorial crossing (EQX) for the RS satellites RS-5, 6, 7 and 8. For AO-10 the time and position (latitude/longitude) of the subsatellite point for every apogee during 1984 will be documented. This information is suitable as an entry to any of several manual plotters now being readied for market. (K2ZRO's new Satellipse plotter will be available soon *ASR* is told.) A plotter was described in detail in *Orbit* Magazine #14.

A minimum donation of $10 is requested for the calendar mailed first class to U.S., Canada and Mexico. The donation is $12 elsewhere. Mail your order to: Project OSCAR, P.O. Box 1136, Los Altos, CA 94022. Delivery begins in late December. Order now.

AMSAT-OSCAR 10 Apogee Times

Mon	Dec	12	10:37:55.182	1983	UTC	at	18.795N	30.739E
Mon	Dec	12	22:17:27.146	1983	UTC	at	18.837N	144.568W
Tue	Dec	13	09:56:59.109	1983	UTC	at	18.879N	40.126E
Tue	Dec	13	21:36:31.723	1983	UTC	at	18.920N	135.181W
Wed	Dec	14	09:16:03.356	1983	UTC	at	18.962N	49.512E
Wed	Dec	14	20:55:34.999	1983	UTC	at	19.003N	125.794W
Thu	Dec	15	08:35:06.962	1983	UTC	at	19.044N	58.899E
Thu	Dec	15	20:14:38.926	1983	UTC	at	19.086N	116.407W
Fri	Dec	16	07:54:10.889	1983	UTC	at	19.127N	68.286E
Fri	Dec	16	19:33:42.852	1983	UTC	at	19.168N	107.020W
Sat	Dec	17	07:13:14.815	1983	UTC	at	19.209N	77.674E
Sat	Dec	17	18:52:46.779	1983	UTC	at	19.249N	97.633W
Sun	Dec	18	06:32:18.742	1983	UTC	at	19.290N	87.061E
Sun	Dec	18	18:11:50.705	1983	UTC	at	19.331N	88.245W
Mon	Dec	19	05:51:22.669	1983	UTC	at	19.371N	96.449E
Mon	Dec	19	17:30:54.632	1983	UTC	at	19.411N	78.857W
Tue	Dec	20	05:10:26.595	1983	UTC	at	19.452N	105.837E
Tue	Dec	20	16:49:58.559	1983	UTC	at	19.492N	69.468W
Wed	Dec	21	04:29:30.522	1983	UTC	at	19.532N	115.226E
Wed	Dec	21	16:09:02.485	1983	UTC	at	19.572N	60.080W
Thu	Dec	22	03:48:34.449	1983	UTC	at	19.612N	124.615E
Thu	Dec	22	15:28:06.412	1983	UTC	at	19.652N	50.691W
Fri	Dec	23	03:07:38.375	1983	UTC	at	19.691N	134.004E
Fri	Dec	23	14:47:10.339	1983	UTC	at	19.731N	41.302W
Sat	Dec	24	02:26:42.302	1983	UTC	at	19.770N	143.393E
Sat	Dec	24	14:06:14.265	1983	UTC	at	19.810N	31.912W
Sun	Dec	25	01:45:46.228	1983	UTC	at	19.849N	152.782E
Sun	Dec	25	13:25:18.192	1983	UTC	at	19.888N	22.523W

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